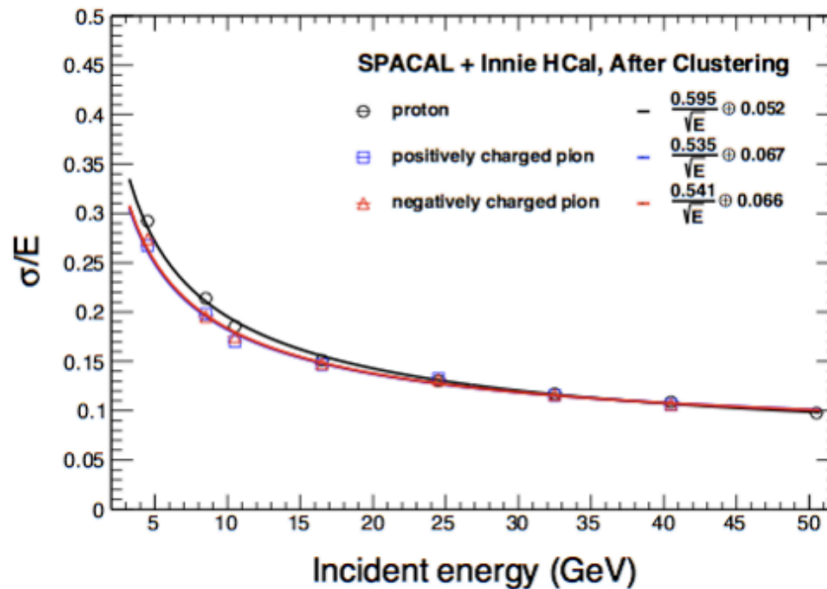


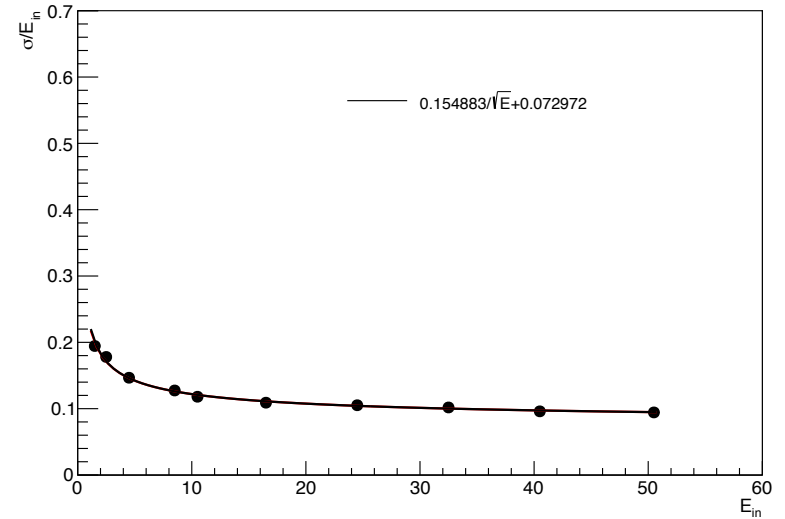
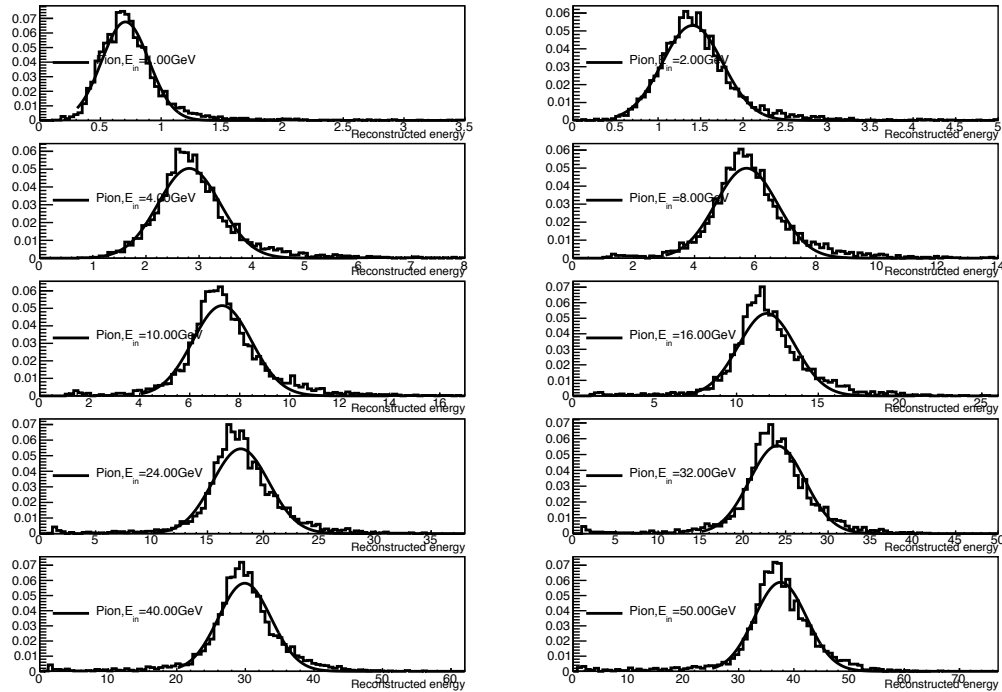
The draft of resolution in arXiv



From latest draft from the arXiv (<http://arxiv.org/pdf/1501.06197.pdf>)
I think made by Liang?
Inner Hcal fully implemented?

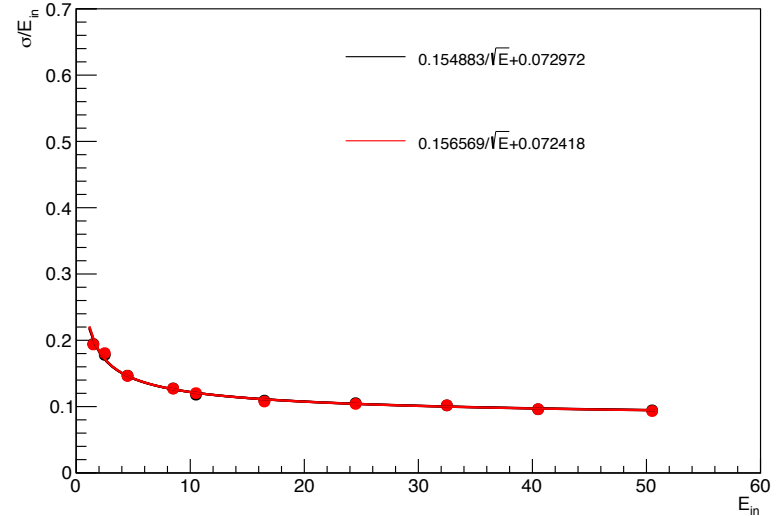
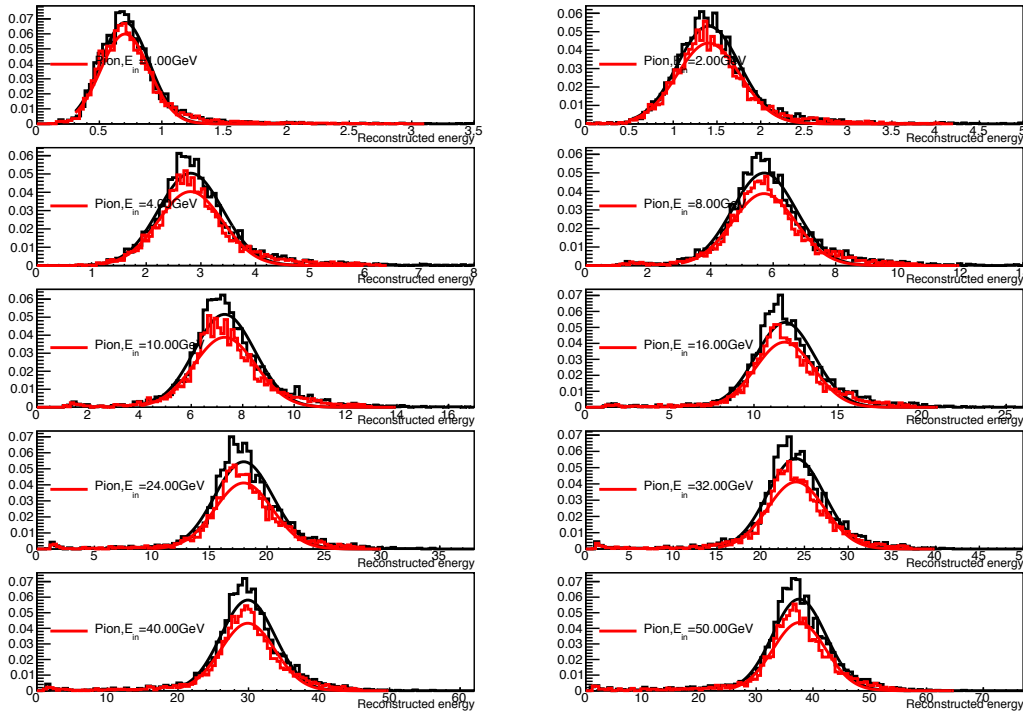
Next slides I calculated several of resolution with the current detector setup

Resolution



With all G4Hits. Too Good!

Resolution



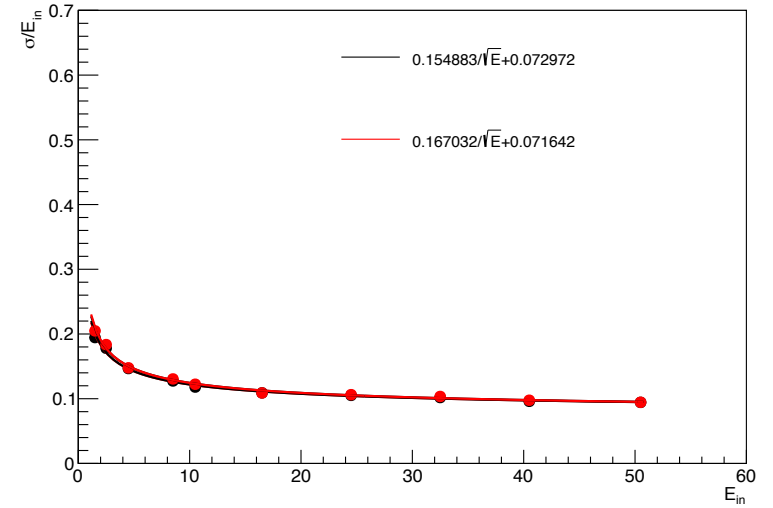
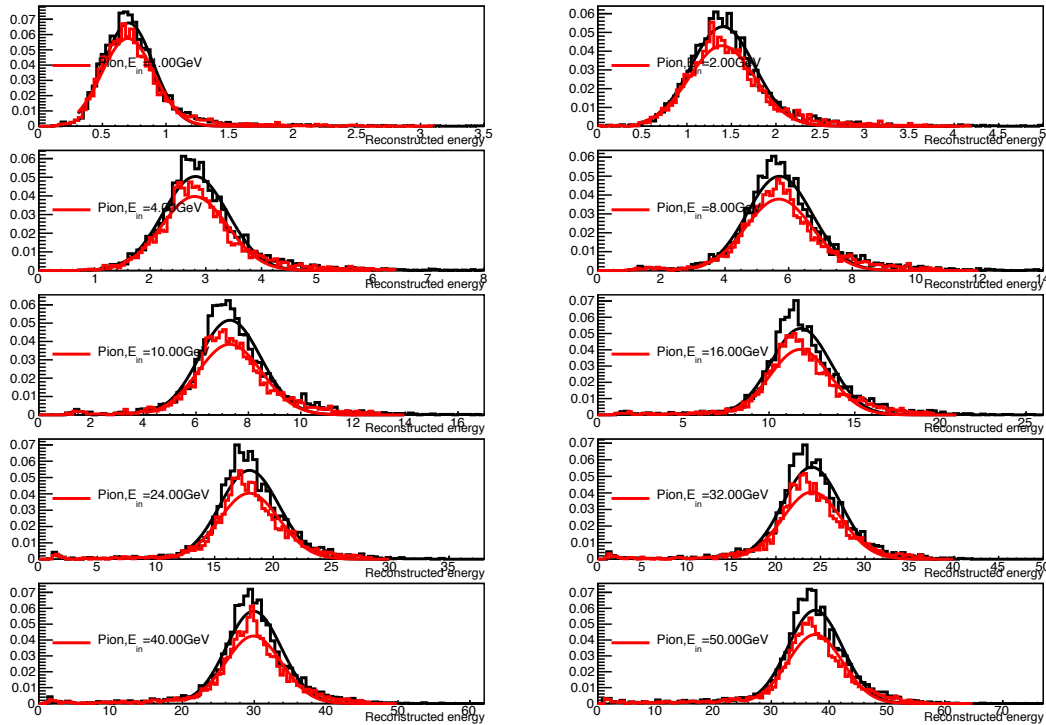
With all G4Hits.

A light collection efficiency applied with an efficiency of 50% with $\sigma = 10\%$.

$$E_{\text{sum_edep}} = \text{Sum}(\text{Gaus}(1,0.5,0.1) * g4hit_edep)$$

$$E_{\text{reco_detector}} = E_{\text{sum_edep}} * 2 / SF$$

Resolution



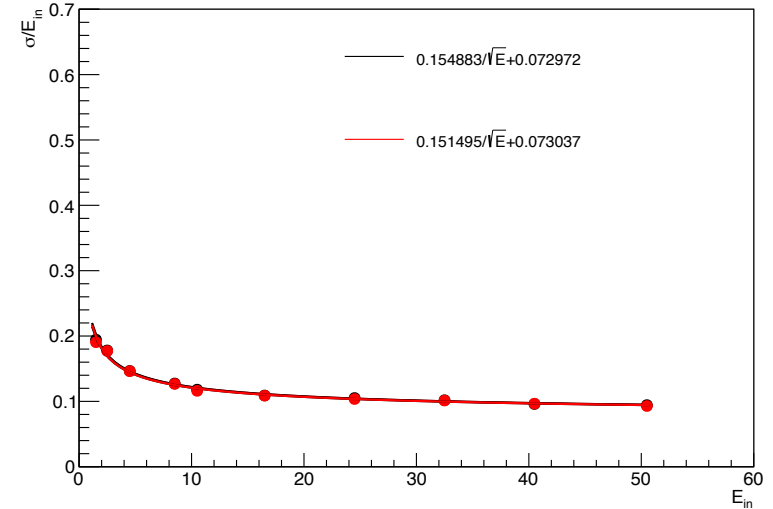
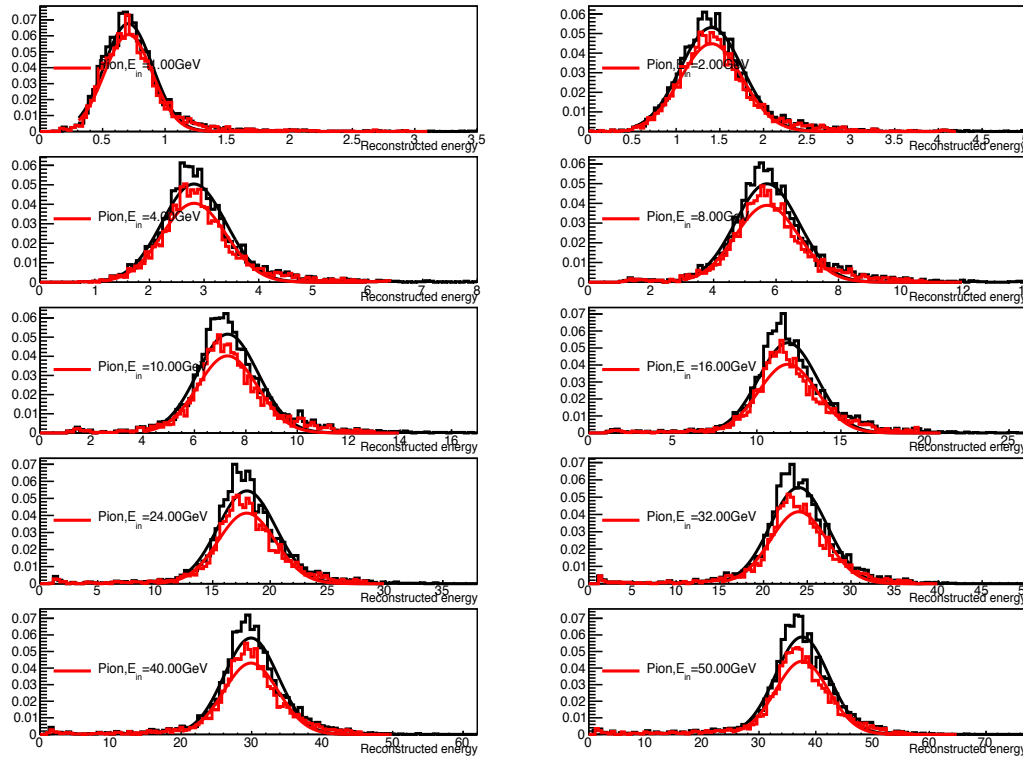
With all G4Hits.

A light collection efficiency applied with an efficiency of 50% with $\sigma = 20\%$.

$$E_sum_edep = \text{Sum}(\text{Gaus}(1,0.5,0.2)*g4hit_edep)$$

$$E_reco_detector = E_sum_edep*2/SF$$

Resolution



With all G4Hits.

A light collection efficiency applied with Poisson distribution. The number of secondary particles is $\sim 1000/\text{GeV}$. Assuming each can MIP,

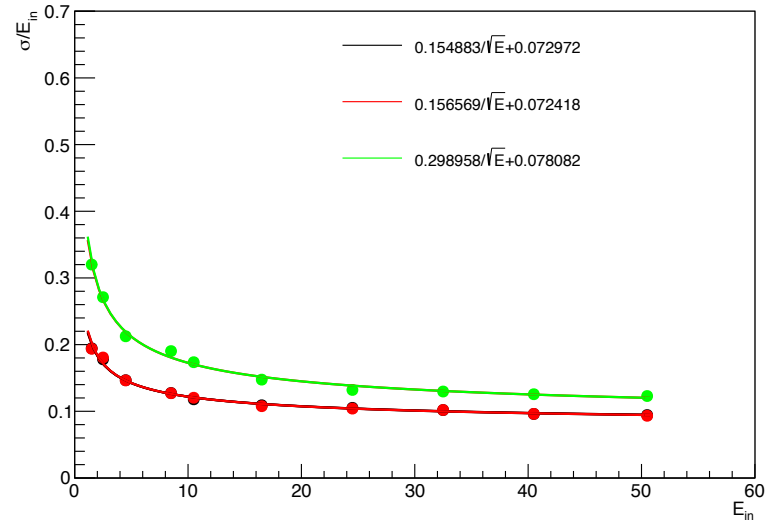
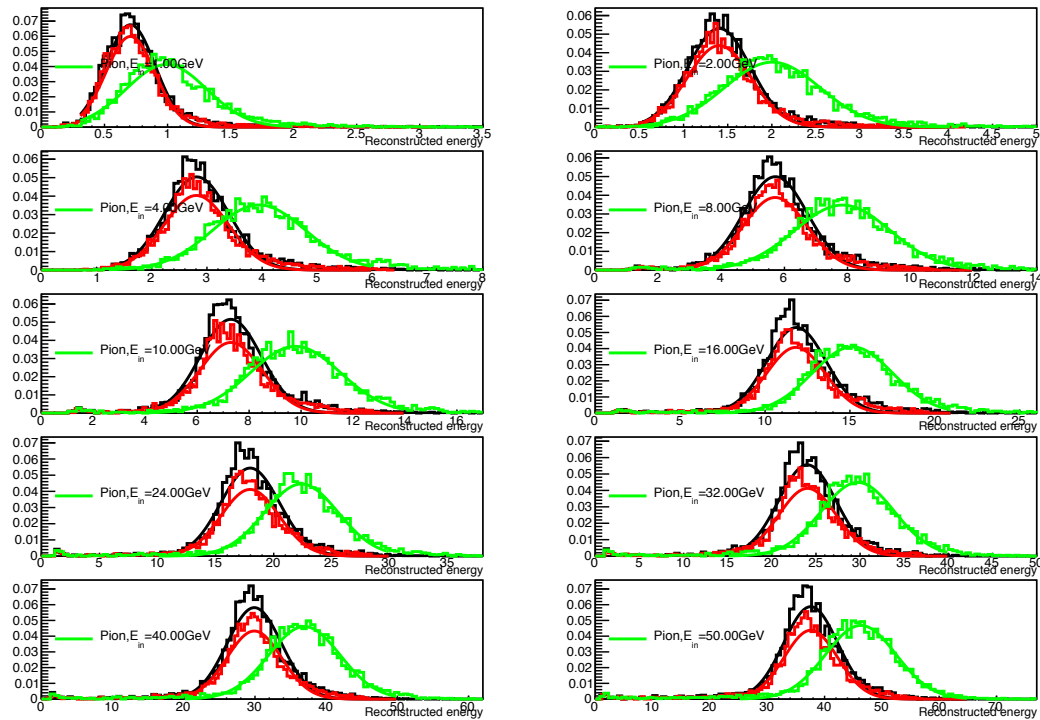
$\text{ntrks} = 1000 * e_{\text{truth}}$;

$\text{eff} = 0.5 * \text{Poisson}(\text{ntrks}) / \text{ntrks}$

$E_{\text{sum_edep}} = \text{Sum}(\text{eff} * g4hit_edep)$

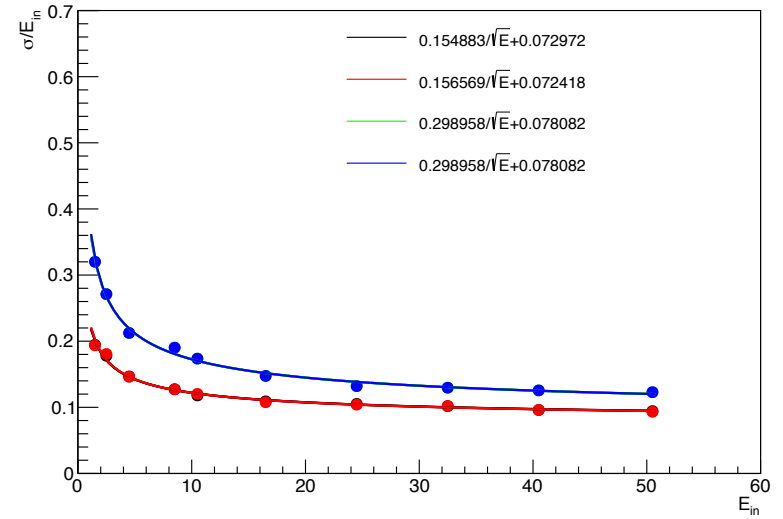
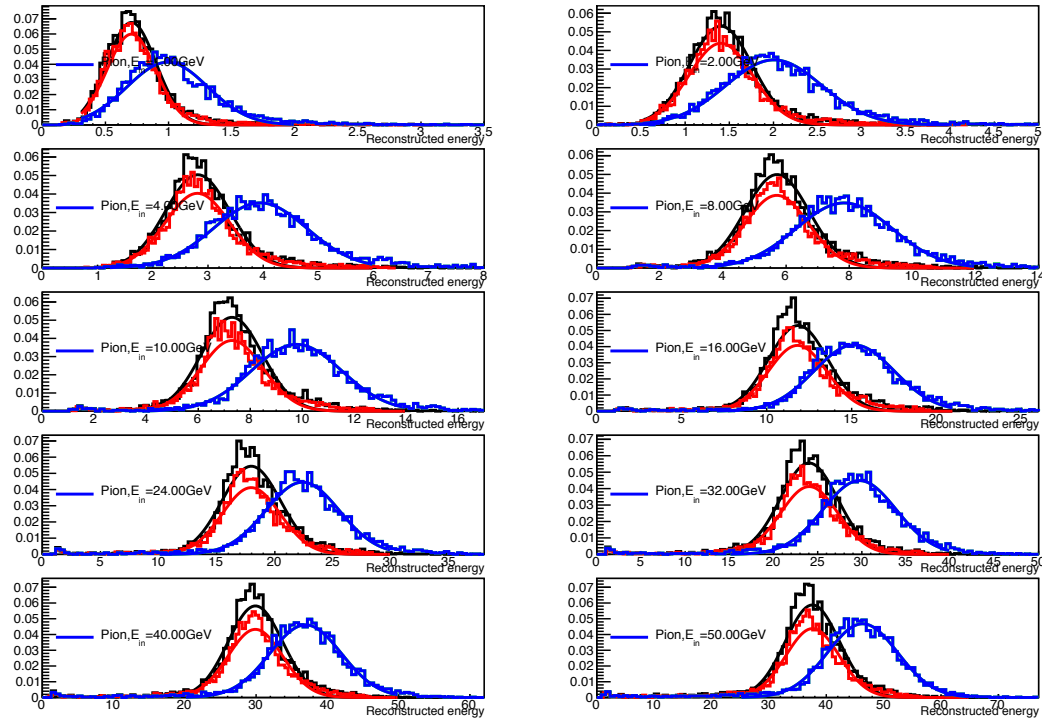
$E_{\text{reco_detector}} = E_{\text{sum_edep}} * 2 / \text{SF}$

Resolution



After clustering.
All clusters included.

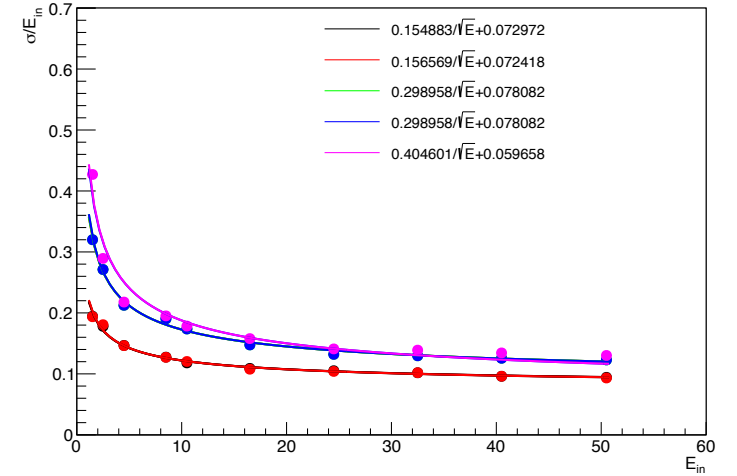
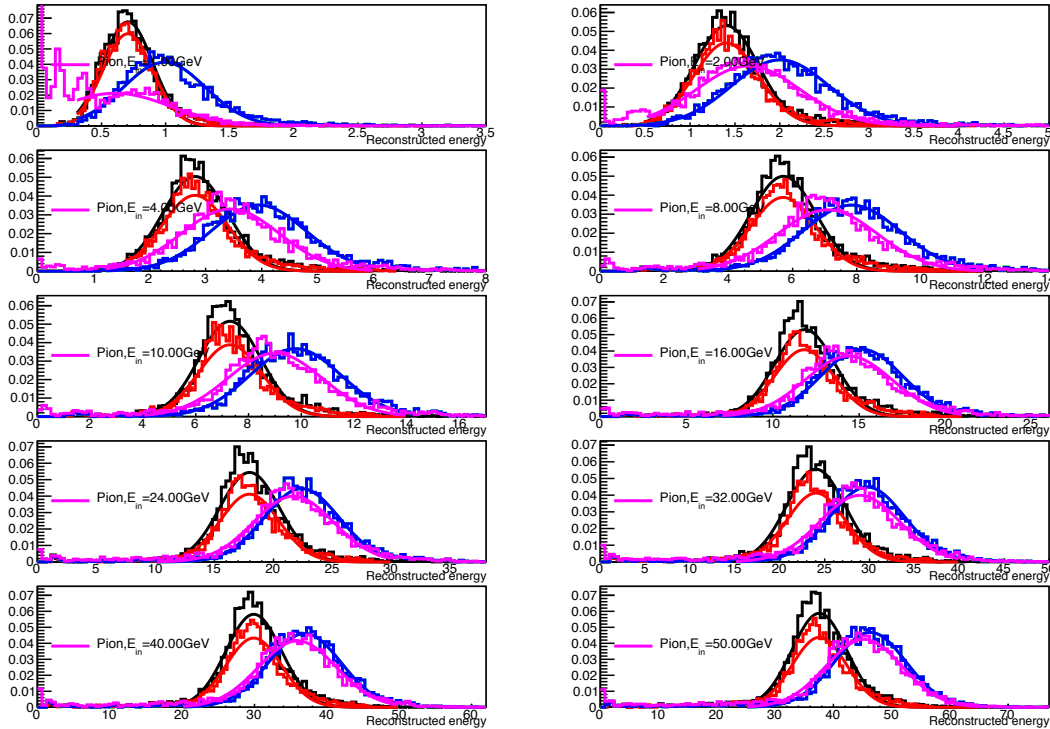
Resolution



With Towers. Exactly on top of clusters.
All towers included.

Why the `light_yield()` was taken out from `RawTowers`?

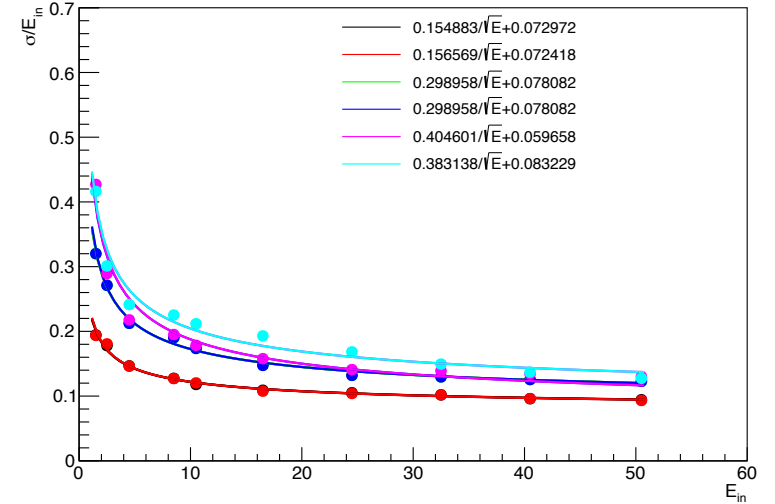
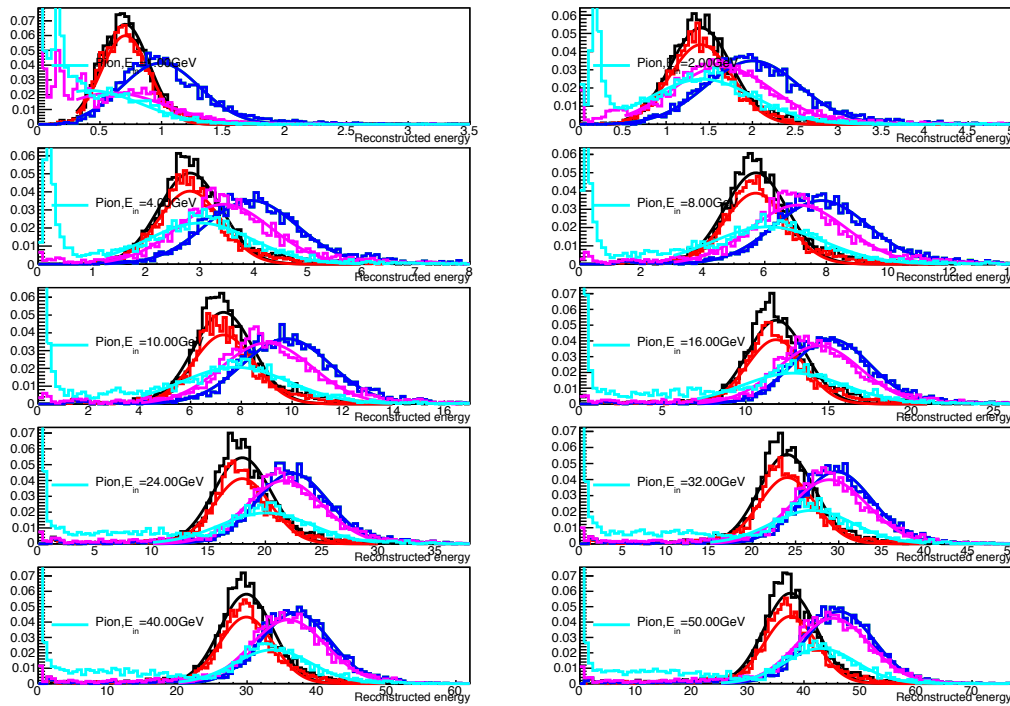
Resolution



With clusters within a cone of $dR < 0.3$.

$$\Delta R = \sqrt{\Delta\eta^2 + \Delta\phi^2}$$

Resolution



With towers within a cone of $dR < 0.3$.

$$\Delta R = \sqrt{\Delta \eta^2 + \Delta \phi^2}$$